

**ABSTRACT****ON-LINE MEASUREMENT AND CONTROL OF POLYMER PRODUCT  
PROPERTIES BY RAMAN SPECTROSCOPY**

Methods are provided for determining and controlling polymer product properties on-line in a slurry reactor system, such as a stirred slurry or slurry loop reactor. The methods include obtaining a regression model for determining a polymer product property, the regression model including principal component loadings and principal component scores, acquiring a Raman spectrum of polymer product in the slurry reactor system, calculating a new principal component score from at least a portion of the Raman spectrum and the principal component loadings, and calculating the polymer product property by applying the new principal component score to the regression model. The property can be controlled by adjusting at least one polymerization parameter based on the calculated polymer product property.